

The Second International Meeting of the Asia-Pacific Space Geodynamics (APSG) Program

**Tahiti, French Polynesia
12 - 16 May 1998**

First Circular

International Workshop

The Laboratory for Marine Geosciences at the French University of the Pacific will host on May 12-16 in Tahiti, French Polynesia, the Second International Meeting of the Asia-Pacific Space Geodynamics (APSG) Program in collaboration with the Centre National d'Etudes Spatiales (CNES), the Shanghai Astronomical Observatory and the National Aeronautics and Space Administration (NASA).

Intent of the Asia-Pacific Space Geodynamics Program

The intent of the APSG Program is to develop international collaboration between scientists and experts in measurement techniques who are working in the Asia-Pacific region to (1) advance research in crustal motion, deformation, and sea level change; (2) provide basic information on the causes of and means for mitigating natural disasters; (3) enrich our knowledge of the dynamics of the Earth, (4) promote international scientific exchange and cooperation, and (5) contribute to raising the scientific research level in the developing countries.

Topics of the Meeting

1. Crustal Motion and Dynamics of the Tibetan Plateau;
2. Crustal/Tectonic Motion of the Western Pacific Volcanic-Seismic Belt; and
3. The Impact of Sea Level Variations on the Asia-Pacific Region

Objectives of the Meeting

1. Review and discuss related scientific activities currently underway within the region;
2. Review the status of organization and planning activities for the Science Working Groups established for each of the three topics above at the Shanghai Meeting in May 1996;
3. Review the status and planning of measurement technique development and deployment; and
4. Continue collaborative planning for coordinated program implementation.

Meeting Organizing Committee

Prof. Alain Bonneville, Laboratory for Marine Geosciences at the French University of the Pacific in Tahiti, host

Prof. Shuhua Ye, Shanghai Astronomical Observatory, Chair, APSG Steering Committee

John Bosworth, NASA/Goddard Space Flight Center

Dr. Michael Pearlman, Harvard-Smithsonian Center for Astrophysics

Dr Jean Louis Counil, Centre National d'Etudes Spatiales

APSG Management Board

John Manning (Australia), Shuhua Ye (China), S. Sutisna (Indonesia), Makato Murakami (Japan), V.N. Strakhov/S.K. Tatevian (Russia), Uk Han (South Korea), Miriam Baltuck (USA)

Scientific Background and Motivation

The Asian-Pacific area, primarily the western Pacific boundary zone including China, Japan, and Southeast Asia, and the northern Indian Ocean boundary zone including the Tibetan Plateau of China and Southeast Asia, is the convergence zone of four plates: Eurasian, Pacific, Philippine and Indo-Australian. The region also includes a major portion of the tectonic system that is responsible for new activity in the Round-Pacific and the Alps-Himalayas mountain-building zones. The area is characterized by complex tectonics, violent crustal motion, frequent and fierce earthquakes, and devastating volcanic activity. In this area there is dense population, rapidly developing economics, and yet frequent and serious natural hazards (earthquakes, volcanic eruptions, sea immersion, etc.). Therefore this area is one of the most appropriate and urgent regions for research in tectonic and crustal motion, local deformation, sea-level change and their effects on the existing human environment. The main objective of the Asia-Pacific Space Geodynamics (APSG) Program is to unite all relevant activities in the region into a cooperative research project in plate tectonic, crustal motion and deformation, and sea level change in the area. This will provide a synergistic umbrella for scientists in the region to cooperate and to contribute to the better understanding of the processes involved and better prediction of major disastrous events.

All countries in the Asia-Pacific area are urged to join in this project, while countries outside the area are warmly invited to participate. The project will promote international academic exchange and scientific cooperation, and will contribute to the scientific research level of the developing countries in this area.

The primary objectives of study for the APSG are to:

1. measure and monitor, using space techniques, the relative motion between the Eurasian, Pacific, Philippine, and Indo-Australian plates including the plate tectonic motion along the boundaries, as well as local crustal deformation;
2. study the evolution and dynamics of the crustal motion of the island-arc system in the Western Pacific boundary zone and the mountain-building zones of the Tibetan Plateau and Southeast Asia;

3. measure and monitor sea-level change in the Asia-Pacific region using space techniques including altimetry and tide gauge data to study the characteristics and causes of the fluctuations in global sea surface;
4. investigate the dynamics of the Earth as a whole (Earth rotation, gravity changes, etc.) and the mass motions within each layer (including the atmosphere, oceans, lithosphere, mantle, and the core) and their dynamic relations; and
5. investigate natural hazards (earthquakes, volcanic eruptions, sea immersion, etc.) in the region as well as their relation with various Earth motions, and provide basic information for the prediction of natural disasters.

Using primarily space techniques, the APSG project will study the mechanisms for crustal motion and sea-level change in the Asia-Pacific region. There are already a number of IGS Global Positioning System (GPS) core stations operating in the region, many other GPS stations are operated as part of domestic or local permanent networks or as part of local measurement campaigns. At present there are also 25 fixed Very Long-Baseline Interferometry (VLBI) or Satellite Laser Ranging (SLR) stations in the area. Several new permanent and mobile VLBI and SLR stations will be operational within the next few years.

Historical Background

A proposal to organize the APSG was first presented at the WEGENER meeting in St. Petersburg in June 1994. The proposal was then endorsed by the United Nations Expert Symposium on Space Technology and Application for Sustainable Development in Beijing China in September 1994, and included as a Symposium recommendation to the Ministerial Conference on Space Applications for Development in Asia and the Pacific under the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP).

The APSG was then compiled into an Action Program for Chinese Space Applications for sustainable Development. Presentations were made at the Third Asian-Pacific Radio Telescope Meeting at Urumqi, China in October 1994 and at the Ninth International Workshop on Laser Ranging Instrumentation held at Canberra, Australia in November 1994. At a meeting held after the Workshop in Canberra, representatives from Australia, China, Japan, and the USA expressed their strong support for the APSG project and agreed to form a Steering Committee chaired by Prof. Ye Shuhua with membership from the above five countries. They agreed that a detailed plan should be prepared for submission to the International Association of Geodesy (IAG) at its General Assembly in Boulder, Colorado, USA in July 1995. The IAG accepted the project and recommended that it be supported by local institutions and international cooperating agencies.

The first International Meeting of the APSG was held in Shanghai in June 1996. Attendees from Australia, China, Germany, Hong Kong, Indonesia, Japan, Russia, South Korea, and the USA agreed that APSG should be set up in a manner similar to WEGENER, where the scientific research activities would be organized and coordinated by Scientific Working Groups, and measurement expertise would be represented by a Measurement Working Group organized into technique panels. Three Science Working Groups were organized to begin activities:

1. Crustal Motion and Dynamics of the Tibetan Plateau
Convener: Prof. Zong-jin Ma, Institute of Geology, State Seismological Bureau, Beijing;
2. Crustal Tectonic Motion of the Western Pacific Volcanic-Seismic Belt

- Conveners: Dr. Yehuda Bock, Scripps Institution of Oceanography, La Jolla, CA
Dr. Makato Murakami, GSI, Ibaraki, Japan;
3. The Impact of Sea Level Variations on the Asia-Pacific Region
Convener: Dr. T.S. Murty, National Tidal Facility, Adelaide, Australia (to be replaced)

as were key Measurement Panels including:

1. GPS (and other radio satellite tracking methods),
Convener: Ruth Neilan, Jet Propulsion Laboratory, Pasadena, CA
2. Gravity
Convener: Dr. Houtze Hsu, Institute of Geodesy and Geophysics, Wuhan
3. Synthetic Aperture Radar
Convener: Dr. Miriam Baltuck, NASA Special Representative for Australia and Southeast Asia, Canberra
4. Satellite Laser Ranging
Convener: John Manning, Australian Surveying and Land Information Group, Canberra
5. VLBI
Convener: Dr. Taizoh Yoshino, Communications Research Laboratory, Tokyo

Who Should Attend?

Scientists and measurement technique practitioners from universities, research institutions, and industry who are working in or planning to work in APSG related research in the geographic region and would like to benefit as a part of a multi-discipline, collaborative program .

The Meeting

The meeting will provide a venue for scientists working in the above disciplines in the Asia-Pacific region to meet, discuss their work, and plan activities that would benefit from a synergistic umbrella supported by key institutions and agencies in the region.

Attendees should come prepared to give short presentation (supported by posters) on their work in the region along with their current plans. Conveners will report on the progress-to-date in organizing their Working Groups and Panels, and in the development of their charters and plans. Time will be allocated for individual Science Working Group Meetings and progress reports to the Plenary Session.

Attendees not already a member of a Science Working Group will be asked to join the most pertinent one for the duration of the meeting.

Our goal for this APSG meeting is to strengthen the Working Groups so they will be well on their way toward autonomy, where they can function as planning and organizational entities to (1) coordinate present measurement and analysis activities and (2) develop and implement new programs.

Dedication of the Tahiti Geodetic Observatory

All participants of the APSG meeting are invited to attend the dedication of the Tahiti Geodetic Observatory including the new SLR facility at the French University of the Pacific. The site now includes GPS, DORIS, PRARE and SLR. The dedication will include a day of science seminars and a sunset dedication ceremony on Tuesday, 12 May.

In continuation of the very successful NASA-CNES cooperative program conducted from 1982 to 1994 utilizing satellite laser ranging (SLR) technology for space geodetic measurements in French Polynesia, NASA, CNES and the French University of the Pacific have decided to cooperate on the installation and operation of a Satellite Laser Ranging (SLR) system at the University site in Tahiti. The agreement signed for 10 years in February 1997, states that NASA provides the SLR system with a permanent technical assistance while the French party provides the site, the site facilities and the qualified personnel for SLR operations. The MOBLAS 8 SLR system was moved from its previous location in Quincy, California, to Tahiti during the Summer 1997. The first satellite tracking was made in October 97 and since then the station is on training mode. The team of observers is now composed of three people and it is planned the station, in its operational status, will work 16 hours a day, 5 days a week.

With its very privileged location, it is envisioned that the site, equipped since 1994 with a Doppler Orbitography and Radio Positioning Integrated by Satellite (DORIS) beacon, since 1995 with a Precise Range And Range-rate Equipment (PRARE) beacon and since 1997 with a Global Positioning System (GPS) will be a fundamental space geodetic site within the global fiducial network.

Meeting Venue

The meeting will be held in a conference room in the hotel where most of the participants will be lodged (see accommodation section).

Meeting Schedule

Monday, May 11	Arrival and orientation /excursion
Tuesday, May 12	Special seminars and dedication of the Tahiti Geodetic Observatory
Wednesday, May 13	Short scientific presentations supported by posters Status reports from the Science Working Groups Discussion on APSG structure
Thursday, May 14	Presentations from the Measurement Panels
Friday, May 15	Working Group meetings to continue development of research plans
Saturday, May 16	(AM) Working Group reports to plenary session discussion and action plan (PM) Excursion

Proceedings

There are no plans to publish contributed papers. A summary of the activities within each of the Science Working Groups and Measurement Technique Panels will be submitted by each convener within 30 days of the meeting for inclusion in a meeting report for

distribution. Conveners may want to request short synopses of papers from speakers in their sessions for inclusion in their reports.

Travel and Accommodations

Air France will be an official partner of the meeting and special airfares will be available for participants of the meeting.

Special discount rates are also being negotiated with hotels. The selected hotel will be within walking distance from the University campus and the Tahiti Geodetic Observatory. All rooms will have air-conditioning, bathroom facilities and color TV. These special hotel rates will include room, breakfast, lunches and airport transportation. Payment of the hotel deposit will be in French Pacific Francs (XFP) or major credit card.

These special airfares and hotel rates will be available only for people making their reservations through the Meeting Secretariat. Specifics on the hotel including rates will be available in the first week of March (check the APSG98 WEB site for the most recent information).

Registration Fee

A small registration fee may be charged to cover organization expenses, coffee breaks, etc.

General Information

An overview of French Polynesia:

French Polynesia lies in the South Central Pacific between latitudes 5°S and 35°S and longitudes 130°W and 160°W. It is composed of 117 islands and atolls of volcanic origin that form 5 archipelagos: the Marquesas, the Tuamotus, the Society Islands, the Australs and the Gambiers. Its Exclusive Economical Zone represents more than 5 millions of km² while emerged land represents only 4000 km². Tahiti is the biggest and highest of the Society Islands.

French Polynesia is a “overseas territory of France” with a full French citizenship for its 230 000 inhabitants. Since 1984, it has a large autonomy reinforced in 1996. It is governed by a 34-member-territorial assembly that is elected by popular vote every five years. The members select 10 among them to form a Council of Ministers presided by the President of the government. The present President is Gaston Flosse.

The metropolitan French government runs French Polynesia’s foreign affairs, defense, police, justice and higher education. The French state representative is the High Commissioner, Jean Aribaud is the present one.

Language: French is the official language but Tahitian is spoken by most of the local people. English is understood in many restaurants, hotels, shops and banks.

Climate: The society Islands have a mild tropical climate with basically two seasons: the warm and humid period between November and April and the dry season (that does mean

no rain!) between May and October. In May, the temperatures range from 23°C (night) and 28°C (day).

Local time: GMT-10 (or HST)

What to wear: light practical clothing. It is wise to bring a light sweater for the cooler evenings. Light casual clothing is recommended during the meeting.

Official holidays in May 98: May 1st, 8th and 21st are official local holidays where banks, government offices and many shops are closed.

Passports and Visas: No visas are required for visitors coming from the European Community, USA, Japan and New Zealand for a stay of up to 3 months. Visitors from all other countries will need a visa (see a French Consulate near you). Your passport must be valid at least 6 months after the date of entry in French Polynesia. A return travel document is required.

Money and Exchange: The local currency is the French Pacific Franc (FCFP or XFP). The exchange rate with the French Franc is constant: 100 XFP = 5.5 FF. Money can be exchanged in most banks (Westpac, Banque Paribas, Banque de Polynesie, Banque de Tahiti, Banque Socredo) and in many hotels.

In February 98, the exchange rates for some currencies were:

1 US\$ = 110 XFP
1 AUS\$ = 90 XFP
100 Yen = 92 XFP.
1 FF = 18.18 XFP

Credit cards: Visa, MasterCard, American Express and Diners Cards are widely accepted.

Cost of living: Here are some examples of prices in Feb. 98.: moderate lunch 1200-1600 XFP; dinner 2500-3500 XFP; breakfast 600-1200 XFP, coffee 100-200 XFP; sandwich 200-500 XFP, beer (in bars): 250-400 XFP; bus: 150 XFP; rental car: 5000 XFP a day.

Health: There are no major tropical diseases in French Polynesia, in particular no malaria. However, there is always a risk of dengue fever so it is wise to protect oneself from mosquitoes. Medical care is excellent. No vaccinations are required for French Polynesia. Swimming is safe, however it is advised to wear shoes in the ocean, especially on reefs. One should take precautions against sunburn.